

ADDITIONAL NOTES ON THE GENUS VERBENA. XXI

Harold N. Moldenke

VERBENA [Dorst.] L.

Additional & emended bibliography: Alston in Trimen, Handb. Fl. Ceylon 6: 229 & 231. 1931; Kanjilal, Das, Kanijalal, & De, Fl. Assam 3: 461, 462, & 561. 1939; Glover, Prov. Check List Brit. & Ital. Somal. 56, 268, & 269. 1947; R. O. Williams, Useful & Ornament. Pl. Zanzib. 76, 95, & 482. 1949; McVaugh, N. Y. State Mus. Bull. 360A: 195--196, 353, 358, 388, & 432. 1958; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 217. 1959; A. M. Anderson in Mrs. A. S. Anderson, Our Gard. Herit. 44. 1961; Mrs. C. H. Stout in Mrs. A. S. Anderson, Our Gard. Herit. 51. 1961; Mrs. M. J. Fox in Mrs. A. S. Anderson, Our Gard. Herit. 66. 1961; E. Anderson in Mrs. A. S. Anderson, Our Gard. Herit. 79. 1961; Mrs. E. M. Cheston in Mrs. A. S. Anderson, Our Gard. Herit. 357. 1961; Irwin & Wills, Roadside Fls. Seyl. 147. 1968; C. A. Br., Wildfls. La. 155, 156, 242, 244, & 246. 1972; Altschul, Drugs & Foods 243 & 358. 1973; Borland, Seasons 49. 1973; Burlage, Wild Flow. Pl. Lakes Country 143--144. 1973; Farnsworth, Pharmacog. Titles 8 (10): xvii. 1973; Fenaroli, Webbia 28: 356 & 410. 1973; R. R. Rao, Stud. Flow. Pl. Mysore Dist. 2: 752 & 754 [thesis]. 1973; Anon., Sunset 152 (4): 226. 1974; Moldenke, Phytologia 28: 195--221. 1974.

Gunawardena (1968) gives the derivation of the generic name, Verbena, as "Latin, twigs of laurel, olive, myrtle, cypress, etc., used in Roman sacrifices and other religious acts; a corruption of the Celtic fervain which led to English vervain for V. officinalis." Williams (1949) describes the genus as consisting of "creeping plants, lvs. soft and finely divided, fls. small and rosy violet", but this description applies to only a very few species in the genus. Such generic "descriptions", based on only one or a few species, or on the species found in a small geographic area, are most misleading to the non-specialist who may rely on them as descriptive of the entire genus.

VERBENA AMBROSIFOLIA Rydb.

Additional bibliography: Moldenke, Phytologia 28: 195, 199, 200, 204, & 211. 1974.

Spellenberg and his associates encountered this plant in a swale. The corollas on Spellenberg, Ragan, & Willson 3390 are described as having been "pink-lavender" in color when fresh.

Additional citations: NEW MEXICO: Lincoln Co.: Spellenberg, Ragan, & Willson 3390 (N).

VERBENA AMBROSIFOLIA f. EGLANDULOSA Perry

Additional bibliography: Moldenke, Phytologia 28: 111 & 211. 1974.

Lehto and his associates found this plant growing in ponderosa

pine-Gambel oak forests in Arizona.

Additional citations: ARIZONA: Greenlee Co.: Lehto, McGill, Nash, & Pinkava 11267 (N).

VERBENA BIPINNATIFIDA Nutt.

Additional & emended bibliography: Irwin & Wills, Roadside Fls. Tex. 189, pl. 39. 1961; Burlage, Wild Flow. Pl. Lakes Country 143. 1973; Moldenke, Phytologia 28: 195--196 & 199. 1974.

Emended illustrations: Irwin & Wills, Roadside Fls. Tex. pl. 39 (in color). 1961.

Irwin & Wills (1961) give the distribution of this species as "South Dakota to Alabama, west to Arizona and northern Mexico" and say of it that "The Prairie Verbena is one of the most abundant wildflowers in Texas, from the points of view of both distribution and period of flowering. While commonest on limestone soils, it is found throughout most of the state, the only exceptions being the pine forests of the East and the most desertous western regions. It flowers most freely in the spring, but in moist situations in the southern part of the state the flowers keep coming nearly throughout the year. The low matted habit suits the plant well for edge-work in the garden. Restricted to the Trans-Pecos is a plant of similar habit, Wright's Verbena, V. wrightii Gray, an annual with leafy erect or spreading stems and rosy or light purple flowers in spring."

Burlage (1973) records the common names "Dakota Verbena", "Sweet-William", "Small Flowered Verbena", "Common Verbena", "Wild Verbena", and "Plains Verbena" for this plant and says of it that "The flowers bloom from spring until severe freeze. They are clusters of flowers on the top of the stalk, which has many prostrate branches. The leaves are thick, rough, divided into narrow segments. Children suck the nectar from the corollas tube. The Highway Department uses it for roadside planting."

VERBENA BONARIENSIS L.

Additional bibliography: Alston in Trimen, Handb. Fl. Ceylon 6: 231--232. 1931; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 217. 1959; Gunawardena, Gen. & Sp. Pl. Zeyl. 147. 1968; Moldenke, Phytologia 28: 196. 1974.

Alston (1931) describes the inflorescence of this plant as "usually simple", but this is not true. He describes the flower color as "pale mauve" and notes that the plant blooms in Ceylon in December and January. Gunawardena (1968) comments that the specific epithet is derived from Bonaria, the classical name for Buenos Aires, Argentina.

VERBENA BRACTEATA Lag. & Rodr.

Additional bibliography: Moldenke, Phytologia 28: 196. 1974.

Recent collectors have found this plant in grassy areas of piñon-juniper formations and as a member of the shortgrass prairie community in New Mexico.

Additional citations: NEW MEXICO: Lincoln Co.: Spellenberg, Ragan, & Willson 3400 (N). Quay Co.: L. C. Higgins 6915 (N).

VERBENA CAMERONENSIS L. I. Davis

Additional bibliography: Moldenke, *Phytologia* 28: 120. 1974.

Additional citations: TEXAS: Cameron Co.: C. L. Lundell 10771 (M1). MEXICO: San Luis Potosí: C. L. Lundell 12256 (Ld, M1).

VERBENA CANADENSIS (L.) Britton

Additional bibliography: E. Anderson in Mrs. A. S. Anderson, *Our Gard. Herit.* 79. 1961; C. A. Br., *Wildfls. La.* 155, 244, & 246. 1972; Burlage, *Wild Flow. Pl. Lakes Country* 143. 1973; Moldenke, *Phytologia* 28: 197--200 & 209. 1974.

Additional illustrations: C. A. Br., *Wildfls. La.* 155 (in color). 1972.

Burlage (1973) records the common names, "rose verbena", "rose vervain", and "Lambert's verbena", for this species. He says of it: "These have ovate leaves which are toothed or lobed, but not divided as is Wild Verbena [V. ciliata]. The flowers are reddish-purple with white eye surrounded by a black line." Anderson (1961) comments that in the Ozark Mountains this species and Lithospermum canescens "mix brilliant magenta and vivid orange on many hillsides in springtime."

VERBENA CANESCENS H.B.K.

Additional & emended bibliography: Irwin & Wills, *Roadside Fls. Tex.* 190. 1961; Moldenke, *Phytologia* 28: 200--202, 204, 207, & 212. 1974.

VERBENA CAROLINA L.

Additional bibliography: Altschul, *Drugs & Foods* 243. 1973; Farnsworth, *Pharmacog. Titles* 8 (10): xvii. 1973; Moldenke, *Phytologia* 28: 202--203. 1974.

Altschul (1973) cites Hinton 2729 from Mexico and reports his statement that this species is "trituated [and] taken for malaria".

VERBENA CILIATA Benth.

Additional synonymy: Verbena ciliate Benth. ex Burlage, *Wild Flow. Pl. Lakes Country* 143, sphalm. 1973.

Additional bibliography: Burlage, *Wild Flow. Pl. Lakes Country* 143. 1973; Moldenke, *Phytologia* 28: 201 & 203--205. 1974.

Burlage (1973) records the common names, "fringe verbena" and "wild verbena" for this plant and notes that it "is an annual with spreading, square stems with flat-topped clusters of small, reddish or purple flowers. The leaves are opposite. The flowers are tubular. These grow in patches, but never in extended areas."

VERBENA ELEGANS H.B.K.

Additional bibliography: Altschul, *Drugs & Foods* 243. 1973; Moldenke, *Phytologia* 28: 200, 201, & 206--209. 1974.

Altschul (1973) cites Gentry 2730 from Mexico and reports his statement that a decoction is there made of the herbage of this plant and that this is used in the treatment of stomach ailments.

xVERBENA ENGELMANNII Moldenke

Additional bibliography: Moldenke, *Phytologia* 28: 209 & 216. 1974.

Gunderson found this plant growing in cow pastures in Wisconsin, flowering in September, and describes the corolla color as "purple".

Additional citations: WISCONSIN: Grant Co.: J. Gunderson 264 (Ws, Ws).

VERBENA HALEI Small

Additional & emended bibliography: Irwin & Wills, *Roadside Fls. Tex.* 190. 1961; Burlage, *Wild Flow. Pl. Lakes Country* 143. 1973; Moldenke, *Phytologia* 28: 212--213. 1974.

Burlage (1973) records the common names, "blue vervain", "candelabra vervain", "slender verbena", "slender vervain", "standing verbena", and "vervain", for this species. He describes it as "A perennial which takes on renewed blooming from early spring until fall, but only scattered plants bloom after June. The flowers are small, scattered at the top of the stem and are purple. The upper leaves are narrow, those of the midstem are divided and the lower are broad and irregularly toothed." Higgins reports it from gravelly soil in the desert shrub community of Texas.

Additional citations: TEXAS: Brewster Co.: L. C. Higgins 6762 (N).

VERBENA HASTATA L.

Additional & emended bibliography: McVaugh, *N. Y. State Mus. Bull.* 360A: 195, 196, 353, & 432. 1958; Borland, *Seasons* 49. 1973; Moldenke, *Phytologia* 28: 213--218. 1974.

McVaugh (1958) speaks of this plant as "common" in "Pastures and wet places.... Abundant in moist meadows and along streams, but also often weedy, in pastures and cultivated ground." He refers to the corolla-color as "violet-blue".

The D. Wills s.n. [July 27, 1957], distributed as V. hastata, is actually xV. rydbergii Moldenke.

xVERBENA HYBRIDA Voss

Additional & emended bibliography: R. O. Williams, *Useful & Ornament. Pl. Zanzib.* 482. 1949; A. M. Anderson in *Mrs. A. S. Anderson, Our Gard. Herit.* 44. 1961; Mrs. C. H. Stout in *Mrs. A. S. Anderson, Our Gard. Herit.* 51. 1961; Mrs. M. J. Fox in *Mrs. A. S. Anderson, Our Gard. Herit.* 66. 1961; Mrs. E. M. Cheston in *Mrs. A. S. Anderson, Our Gard. Herit.* 357. 1961; Irwin & Wills, *Roadside Fls. Tex.* 190. 1961; Moldenke, *Phytologia* 28: 220--221. 1974.

Burkill (1966) says that "V. hybrida must be grown as an annual from imported seed [in Malaya], and, as Mrs. Gough says (*Gard. Book for Malaya*, 1928, p. 248), is impatient of damp and not always a success in wet weather." Williams (1949) records it as cultivated on Zanzibar and Pemba islands in many colors, rooting "at the joints", and "especially in garden beds during cooler weather."

The Boulos s.n. [July 1952], distributed as xV. hybrida, is actually V. rigida Spreng.

Additional citations: CULTIVATED: Bermuda: Brown & Britton 1728 (Ba--photo). Canada: Gillett 40-422-67 (Ba). Ceylon: Moldenke, Moldenke, Jayasuriya, & Sumithraarachchi 28291 (Pd). Egypt: Has-sib s.n. [29/4/1941] (Gz); Mahdi s.n. [16/6/1971] (Ac); Sisi s.n. [26/5/1973] (Gz); V. Tackholm s.n. [30/10/1959] (Gz). New York: R. B. Clark s.n. [B. H. 64-106] (Ba); D. A. Fisher s.n. [July 6, 1936] (Ba). Pennsylvania: J. W. Peterson J.104 (Ba). Saint Thomas: Britton & Britton 237 (Ba--photo). South Africa: Bayliss BC.1184 (Ba). Texas: C. L. Lundell 10936 (Mi). Zambia: Coxe 18 (Ba).

xVERBENA ILLICITA Moldenke

Additional bibliography: Rydb., Fl. Prairies & Plains, pr. 1, 677 (1932) and pr. 2, 2: 677. 1971; Moldenke, Phytologia 23: 278. 1972.

VERBENA INCISA Hook.

Additional synonymy: Verbena arraniana Paxt., Pock. Bot. Dict., ed. 1, 328. 1840.

Additional & emended bibliography: Paxt., Pock. Bot. Dict., ed. 1, 328 (1840) and ed. 2, 328. 1849; Dupuis, Nouv. Fl. Usuel. & Med. 2: 158. 1860; Furusato, Bot. & Zool. Theoret. & Appl. Tokyo [Syokubutu Oyobi Dobuti] 8: 1304, 1306, 1307, 1310, & 1311 [8 (8): 40, 42, 43, 46, & 47], fig. 3. 1940; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 839, map 1393. 1971; Encke & Buchheim in Zander, Handwörterb. Pflanzenn., ed. 10, 520. 1972; F. Perry, Fls. World 303 & 320. 1972; Moldenke, Phytologia 24: 218 & 237 (1972) and 25: 234 & 244. 1973; Moldenke in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 45 & 148. 1973; Moldenke, Phytologia 28: 221. 1974.

Additional illustrations: Furusato, Bot. & Zool. Theoret. & Appl. Tokyo [Syokubutu Oyobi Dobuti] 8: 1307 [8 (8): 43], fig. 3. 1940.

Furusato (1940) reports that seeds of this plant required about 18 days to germinate under normal conditions; with 0.02 percent colchicine they also required 18 days; with 0.05, 0.1, and 0.2 percent 20 days; and with 0.4 and 0.8 did not germinate at all. The species' normal chromosome number he reports as 10, diploid 20, and tetraploid 40; no octoploid was produced.

The Angely (1971) reference cited in the bibliography above was previously cited by me as 1970, the title-page date, but this work was not actually published until 1971.

Paxton (1840) asserts that V. incisa was introduced into cultivation in England in 1835 and his V. arraniana in 1837. Dupuis (1860) describes the color of the flowers as "rose pourpre", which leads one to suspect that his plant was not V. incisa.

The late Dr. T. A. Sprague, in a letter to Dr. L. H. Bailey dated 9/6/24, says "Verbena incisa Hook. Bot. Mag. t. 3628 (1838).

Only a fragment (two nodes, without flowers) of the actual type-specimen was preserved, and this would not make a satisfactory photograph. There is, however, a fine contemporary specimen of a plant cultivated as V. incisa in the Gardens of the Horticultural Society. This agrees with the Bot. Mag. plate and may be accepted as a 'working type'. It is being photographed. The sheet containing the wild specimens cited by Hooker is also being photographed." These photographs have been examined by me and are cited below; all three specimens are preserved in the herbarium of the Royal Botanic Gardens at Kew. The corollas on Quarín 655, cited below, are said to have been "red" when fresh and the collector comments that it is a "maleza en cultivos de algodón" [weed in cotton-fields].

Additional citations: BRAZIL: Rio Grande do Sul: Tweedie 504 (Ba--photo), 505 (Ba--photo). PARAGUAY: Hassler 12335 (Ba--photo, Ba--photo). ARGENTINA: Santa Fé: Quarín 655 (Ld); Tweedie 460 (Ba--photo), s.n. [Santa Fé] (Ba--photo). CULTIVATED: England: Herb. Hort. Soc. Lond. s.n. (Ba--photo). MOUNTED ILLUSTRATIONS: Hook., Bot. Mag. 65: pl. 3628. 1839 (Ba--photo).

VERBENA INTEGRIFOLIA Sessé & Moc.

Additional bibliography: Moldenke, *Phytologia* 23: 280. 1972.

Additional citations: LOCALITY OF COLLECTION UNDETERMINED: C. Hayden s.n. (Pd).

xVERBENA INTERCEDENS Briq.

Additional bibliography: Moldenke, *Phytologia* 23: 280 (1972) and 28: 116. 1974.

Recent collectors describe this plant as attaining a height of about 1 meter. When in cultivation as "a garden annual" in the United States gardens it flowers and fruits in July and August. In Brazil it has been encountered on the campos. The corollas are said to have been "pale-violet" on Dress 1393, "violet" on Krapovickas, Cristóbal, & Maruñak 23056, and "purple" on Cowgill 903 -- the last mentioned collection being taken from plants grown from seed of Archer 4821 from Paraguay.

Additional citations: BRAZIL: Santa Catarina: Krapovickas, Cristóbal, & Maruñak 23056 (Z). CULTIVATED: Maryland: Cowgill 903 [Pl. Introd. 121505] (Ba). New York: Dress 1393 (Ba).

VERBENA INTERMEDIA Gill. & Hook.

Emended synonymy: Verbena intermedia Gill. ex Gibert, *Enum. Pl. Montev. 43. 1873*.

Additional bibliography: Paxt., *Pock. Bot. Dict.*, ed. 1, 328 (1840) and ed. 2, 328. 1849; Gibert, *Enum. Pl. Montev. 43. 1873*; Fedde in *Just, Bot. Jahresber. 57 (2): 909. 1938*; Reitz, *Sellowia* 22: 145. 1970; Moldenke, *Phytologia* 23: 280--281 (1972), 25: 235 (1973), and 28: 201. 1974.

Gibert (1873) reduces V. canescens to synonymy under V. inter-

media, but this is obviously an error. Verbena canescens is a very distinct species of Nevada, Texas, and Mexico. Paxton (1840) avers that V. intermedia was introduced into cultivation in England in 1828. Rosengurtt Gallinal refers to it as "rare" in Uruguay, and the corollas on Rosengurtt Gallinal 6018 are described as having been "violet" in color when fresh.

Additional citations: URUGUAY: Rosengurtt Gallinal 6018 (Ba), B.765 (Ba).

VERBENA JORDANENSIS Moldenke

Additional & emended bibliography: Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 839 & xix, map 1393, 1971; Moldenke, Phytologia 23: 281. 1972.

The corollas on Hatschbach 30749 are said to have been "white" when fresh and the plant was encountered on rocky campos.

Additional citations: BRAZIL: Paraná: Hatschbach 30749 (Ld).

VERBENA LACINIATA (L.) Briq.

Additional synonymy: Verbena erinaides Willd. ex Lindl. in Edwards, Bot. Reg. 21: pl. 1766, in textu. 1835. Lychnidea verbenae tenuifoliae folio, vulgo Sandia Laguen Feuille. ex Lindl. in Edwards, Bot. Reg. 21: pl. 1766, in syn. 1835. Verbena pulcherrima Hook. ex Dupuis, Nouv. Fl. Usuel. & Med. 80. 1860.

Additional & emended bibliography: Desf., Tabl. Écol. Bot., ed. 1, 54. 1804; Willd., Enum. Pl. Hort. Berol. 2: 634. 1809; Desf., Tabl. Écol. Bot., ed. 2, 66. 1815; Lindl. in Edwards, Bot. Reg. 21: pl. 1748 & 1766. 1835; Paxt., Pock. Bot. Dict., ed. 1, 328 (1840) and ed. 2, 328. 1849; Dupuis, Nouv. Fl. Usuel. & Med. 2: 80 & 104. 1860; Gibert, Enum. Pl. Montev. 43. 1873; Anon., Kew Bull. Misc. Inf. 1929, App. 2: 108. 1929; R. C. Foster, Contrib. Gray Herb. 184: 170. 1958; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 839, vii, & xix, map 1393. 1971; Moldenke, Phytologia 24: 22, 46, 137, 147, 218, 233, & 237--240 (1972), 25: 234 (1973), and 28: 112. 1974.

Dupuis (1860) describes what he calls V. pulcherrima as "Annuelle; tige de 50 cent.; fleurs violettes; juin-octobre" and V. erinoides as "Annuelle; tiges de 10 cent.; fleurs lilas; juin-octobre". Desfontaines (1804) calls the species "verveine laciniée". Paxton (1840) asserts that it was introduced into cultivation in England in 1818. The Verbena erinaides Willd., listed in the synonymy above, was previously erroneously listed by me as a synonym of var. contracta (Lindl.) Moldenke.

The Herb. Desfontaines 4 specimen, of which there is a photograph in the Bailey Hortorium herbarium, bears a label in Desfontaines' own handwriting reading "Verbena multifida F. peruv. V. erinoides L. hb., Erinus laciniatus L." To this Spach (curator of the Paris Museum herbarium at the time) has added: "Verbena tenera Sprgl. -- pulchella Sweet (Non V. erinoides)". A memorandum to Dr. L. H. Bailey from the Paris herbarium curator states that this IS probab-

ly the type specimen of V. erinoides. However, that binomial is based on Erinus laciniatus of Linnaeus and THAT is based on a Feuillée non-existent specimen, so the illustration given by Feuillée must be regarded as the "standard" type according to the late expert on the International Rules, Dr. Sprague of Kew. The Desfontaines and the two Lamarck specimens, photographs of which are cited below, are deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris.

The corollas on Asplund 20147 are said to have been "pale-violet" when fresh and this distinguished collector encountered the plant on dry slopes in Ecuador at 2300 meters altitude.

The Mahu 758-L & 4232 and Morrison 16771, distributed as V. laciniata, are actually V. berterii (Mesin.) Schau., while Eyer-dam & Beetle 22317 is V. dissecta Willd. The Angely (1971) work cited in the bibliography above was previously cited by me as 1970, the title-page date, but was not actually published until 1971.

Additional citations: ECUADOR: Tunguragua: Asplund 20147 (W--2652458). URUGUAY: Herb. Lamarck 3 (Ba--photo). ARGENTINA: Buenos Aires: Herb. Lamarck 2 (Ba--photo). CULTIVATED: France: Herb. Desfontaines 4 (Ba--photo).

VERBENA LACINIATA var. CONTRACTA (Lindl.) Moldenke

Additional synonymy: Verbena erinoides var. sabini Sweet, Brit. Fl. Gard. 7 [ser. 2, 4]: pl. 347. 1836. Verbena sabini Hort. ex Sweet, Brit. Fl. Gard. 7 [ser. 2, 4]: pl. 347, in syn. 1836. Verbena multifida sabini D. Don ex G. Don in Loud., Hort. Brit. Suppl. 2: 680. 1839. Verbena sabini Sweet ex Schau. in A. DC., Prodr. 11: 553, in syn. 1847. Verbena sabiniana Hort. ex Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 297. 1904. Verbena erinoides sabinii D. Don ex Stapf, Ind. Lond. 6: 429. 1931. Verbena laciniata var. sabini (Sweet) Moldenke, Phytologia 3: 426. 1951. Verbena laciniata var. sabinii Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 6: 2211. 1951.

Additional & emended bibliography: Willd., Enum. Pl. Hort. Berol. 2: 634-635. 1809; Paxt., Pock. Bot. Dict., ed. 1, 328 (1840) and ed. 2, 328. 1849; Regel, Gartenfl. 28: 372-373. 1879; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1179. 1895; Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 296-297. 1904; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 1179 (1946) and pr. 3, 2: 1179. 1959; Moldenke, Résumé 223, 364, 370, 373, & 472. 1959; Moldenke, Résumé Suppl. 3: 14, 29, 37, 38, 40, & 41. 1962; Moldenke, Phytologia 9: 394-396, 399, & 401-403 (1963) and 11: 188, 189, 271, & 469. 1965; Moldenke, Fifth Summ. 1: 193, 201, & 371 (1971) and 2: 667, 668, 678, 684, 694, & 916. 1971; Moldenke, Phytologia 23: 284. 1972.

Additional illustrations: Sweet, Brit. Fl. Gard. 7 [ser. 2, 4]: pl. 347 (in color). 1836.

The original description of var. contracta (1835) reads "What

we now figure is a dwarfer and more short-jointed kind [than V. multifida Ruiz & Pav.], our drawing of which was made in the Garden of the Horticultural Society last June. It looks almost like a species of scentless Thyme, and grows into a very dense patch which has but little disposition to extend itself." The original description of var. sabini (1836) is "It differs from the normal variety of erinoides only by its dwarfer, denser, and more glabrous habit, and rich purple flowers". It seems most likely to me now that these two names apply to the same taxon, for which the earlier varietal name must be adopted. Paxton (1840) avers that it was introduced into cultivation in England in 1834; Willdenow (1809) lists it as cultivated at the Berlin Botanical Garden in 1809.

Additional citations: MOUNTED ILLUSTRATIONS: Edwards, Bot. Reg. 21: pl. 1766. 1835 (Ba—photo, Ba—photo, Ba—photo); Sweet, Brit. Fl. Gard. 7 [ser. 2, 4]: pl. 347. 1836 (Ba—photo, Ba—photo, Ba—photo).

VERBENA LACINIATA var. SABINI (Sweet) Moldenke

This taxon is now regarded as a synonym of V. laciniata var. contracta (Lindl.) Moldenke, so all the data recorded by me previously under this trinomial should be transferred to the latter.

VERBENA LASIOSTACHYS Link

Additional bibliography: Paxt., Pock. Bot. Dict., ed. 1, 328 (1840) and ed. 2, 328. 1849; Anon., Kew Bull. Misc. Inf. 1929, App. 3: 108. 1929; Higgins, Occas. Pap. San Diego Soc. Nat. Hist. 8: 121. 1949; Wetzel, Madroño 21: 195. 1971; Moldenke, Phytologia 23: 284—287. 1972; Howitt & Howell, Suppl. Vasc. Pl. Monterey Co. 28. 1973.

Higgins (1949) says that this species is "Common from Point Loma....and San Onofre....to Palomar Mt....and Cuyamaca Mts....; has been taken at Japatul" and cites nos. 6787, 11037, 21028, 22058, & 28844 from California. Wetzel (1971) found it "Fairly common along margins of Alameda Creek" in the same state. Paxton (1840) asserts that it was introduced into cultivation in England in 1826, but is "worthless" in cultivation.

The M. Hall s.n. [May 18, 1940], distributed as V. lasiostachys, is actually V. abramsii Moldenke, while Ferlatte & Rogers 2031 is V. lasiostachys var. septentrionalis Moldenke.

Additional citations: CALIFORNIA: Alpine Co.: Hoover 4161 (B1—191614). Monterey Co.: L. S. Rose 53042 (B1—91003, B1—253598).

VERBENA LASIOSTACHYS var. SEPTENTRIONALIS Moldenke

Additional bibliography: Moldenke, Phytologia 24: 218. 1972; Howitt & Howell, Suppl. Vasc. Pl. Monterey Co. 28. 1973.

Recent collectors describe this plant as "woody at base, in large clumps" and found it growing on open rocky hillsides burned over about 3 years previously and in gravel waste lands by old

cabins with Plantago, Lepidium, and Cryptantha. The corollas on Ferlatte & Rogers 2031 are said to have been "purple" and these collectors speak of the plant as being "occasional" in its distribution.

Additional citations: CALIFORNIA: Santa Cruz Co.: Moldenke & Moldenke 25971 (Ac). Trinity Co.: E. K. Balls 13802 (B1--60169); Ferlatte & Rogers 2031 (B1--245222).

VERBENA LILACINA Greene

Additional bibliography: Moldenke, Phytologia 23: 288. 1972.

Recent collectors describe this species as a rounded shrub, 1 m. tall, or a bushy herb, and found it growing at altitudes of 10 to 1100 meters on silty flats or the steep north slope of canyons. Moran 17123 bears a notation that this collection represents "the northernmost [specimen] seen on the coast road, Puerto San José", Baja California. The Haines & Hale unnumbered specimen in the University of Arizona herbarium is said to be a topotype of the species. The corollas on Moran 8195 & 10669 are said to have been "lavender" when fresh.

Additional citations: MEXICO: Baja California: R. Moran 8195 (Ba, B1--187272), 17123 (Id), 17127 (B1--264354). MEXICAN OCEANIC ISLANDS: Cedros: Haines & Hale s.n. [9 March 1939] (B1--76561), s.n. (Tu--102687); R. Moran 10669 (Ba), 10698 (B1--187261).

VERBENA LINDMANI Briq.

Additional & emended bibliography: Reitz, Sellowia 13: 110 (1961) and 22: 145. 1970; Moldenke, Phytologia 23: 288. 1972.

VERBENA LITORALIS H.B.K.

Additional & emended bibliography: Paxt., Pock. Bot. Dict., ed. 1, 328 (1840) and ed. 2, 328. 1849; Gibert, Enum. Pl. Montevid. 43. 1873; Hartwell, Lloydia 34: 387. 1922; Fedde & Schust. in Just, Bot. Jahresber. 59 (2): 417. 1939; Oertel, U. S. Dept. Agr. Circ. 554: 21. 1939; Garcia Alcover, Med. Herb. Chil. 1950; Angely, Taxon 4: 120. 1955; R. C. Foster, Contrib. Gray Herb. 184: 171. 1958; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 839, 840, & xix, map 1394. 1971; Beadle, Evans, Carolin, & Tindale, Fl. Sydney Reg., ed. 2, 507. 1972; Faernsworth, Pharmacog. Titles 7 (4): xxv & 222. 1972; Hinton & Rzedowski, Journ. Arnold Arb. 53: 167. 1972; Rouleau, Taxon Index Vol. 1-20, part 1: 378. 1972; Moldenke, Phytologia 24: 216, 218, & 224 (1972) and 25: 234. 1973; Altschul, Drugs & Foods 243. 1973; Farnsworth, Pharmacog. Titles 6, Cum. Gen. Ind. [121]. 1973; Moldenke in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 44--47 & 148, fig. 1. 1973; Moldenke, Phytologia 28: 203 & 218. 1974.

Additional illustrations: Moldenke in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 46, fig. 1. 1973.

Recent collectors have found this species growing in wet sand or roadside marl, open fields and clearings, hillside pastures, rainforests on mountains, mountain slopes, and cloudforests, along

weedy roadsides, on high ridges and hillslopes, at the edges of old coffee plantations in fertile soil with rocks, and on steep slopes with Quercus, Pinus, Liquidambar, Podocarpus, and Magnolia. In South Africa it has been found in mountainous areas with many springs and streams, some wooded and some grassy areas, basically dolomites and limestone covered with deep humus in many places. They describe it as 0.8--1 m. tall, the stems quadrangular and ribbed, the uppermost parts and calyx-tips purple, and the leaves medium-green. Scora refers to the species as abundant on exposed lava on Quaternary continental deposits in Veracruz, Mexico; Bristol says that it is common in waste places in Putumayo, Colombia; and Ruiz-Teran & López-Figueiras found it "en paties y jardines" in Mérida, Venezuela. Chindoy B. asserts that it is medicinal in Colombia.

Additional vernacular names recorded for V. litoralis are "mountain verbena", "verbena de montana", and "vervenushe". The corollas are described as having been "violet" in color on Quarín, Mroginski, & González 396 and Proctor 25090, "blue-violet" on Contreras 8783, "lilac" on Breteler 3056 and Contreras 6152, "blue" on Chindoy B. 42, Contreras 2635 & 5241, Dodson & Thien 1810, Hinton & al. 12156, and Rodin 3917, "bluish" on Krapovickas, Cristóbal, Arbo, Maruffak, Maruffak, & Irigoyen 16634, "purple" on Sousa & Diego 1471, "moradas claras" on Ruiz-Teran & López-Figueiras 1903, "pink" on Gentle 6481, "pinkish" on Gentle 7119, "white to pink" on Cooley 11255, and "blue in spring" on Pfeifer 1315, while on Bristol 1154 they are described as "corolla-tube light-purple, limb white" and on Tucker 1308 "throat pale-lavender or white, lobes lavender". Beadle and his associates (1972) describe the corollas as "blue-purple". These authors describe the species as having the spikes short and dense, the peduncles naked for some distance below the flowers or bearing very reduced leaves, the corolla-limb 2--5 mm. in diameter, the tube about 4 mm. long, the calyx about 3 mm. long. They say that the plant is "Hispid with simple hairs becoming almost glabrous in the older parts", the leaves "elliptic to lanceolate in outline, dentate or lobed."

Oertel (1939) lists this species as a honey plant and a pollen-yielding plant in Louisiana. Paxton (1840) states that it was introduced into cultivation in England in 1832. Gibert (1873) reduces V. brasiliensis Vell. and V. littoralis var. pyncnostachya Schau. to synonymy under what he calls V. littoralis Kunth, but seems incorrect. Verbena brasiliensis is quite distinct, although admittedly closely related to V. litoralis, and Schauer's trinomial is synonymous with it.

Altschul (1973) cites Hinton 3731 from Mexico, Steinbach 5137 from Bolivia, and Hinckley & Hinckley 64 from Peru and reports the statements of these well-known collectors that the juice of macerated plants of V. litoralis is taken against malaria and that the plant is also employed as a purgative, in the treatment of contusions, against fevers, and as a "general remedy" for coughs.

The Santa Cruz 1938, distributed as V. litoralis, is actually V. bonariensis L., E. L. Johnson 6310 is V. hayekii Moldenke, Breedlove 9458 is V. litoralis var. albiflora Moldenke, Lindeman & Haas 3692 is V. minutiflora Briq., and Rambo 49723 is V. montevidensis Spreng. The Schultes & Reko 237, cited below, is a mixture with V. carolina L.

Additional citations: FLORIDA: County undetermined: C. D. Byrd s.n. [South Florida, 29 July 1969] (Ft). MEXICO: Chiapas: Ton 2847 (Ws, Ws). Michoacán: Hinton & al. 12156 (Tu--21347). Oaxaca: Pringle 4877 (Pd); Schultes & Reko 237, in part (Oa). Puebla: Marcks & Marcks 794 (Ws). Veracruz: Scora 2451 (W--2635482); Sousa & Diego 1471 (Ba). GUATEMALA: El Petén: Contreras 2635 (Ld), 6152 (Ld), 8783 (Ld, Ld). El Quiché: Contreras 5241 (Ld, Ld); Proctor 25098 (Ld, Ld). BRITISH HONDURAS: Gentle 6481 (Ld), 7119 (Ld). HONDURAS: Department undetermined: Pfeifer 1315 [Mount Uyuca] (W). EL SALVADOR: Santa Ana: Tucker 1308 (Ba). NICARAGUA: Matagalpa: F. C. Seymour 4050 (Vt); Zelaya M. 2324 (Mi, Ws). COLOMBIA: Putumayo: Bristol 1154 (Oa, Oa); Chindoy B. 42 (Oa). VENEZUELA: Mérida: Breteler 3056 (Ws); Ruíz-Teran 5988 (N); Ruíz-Teran & López-Palacios 1903 (N), 6617 (N). ECUADOR: Tunguragua: Dodson & Thien 1810 (Ld, Ws). BRAZIL: Minas Gerais: Irwin, Harley, & Onishi 28721 (N). ARGENTINA: Corrientes: Krapovickas, Cristóbal, Arbo, Maruñak, Maruñak, & Irigoyen 16634 (Ws); Quarín, Mroginski, & González 396 (Ld); Ruíz Huidobro 4275 (Bl--104300), 4710 (Bl--104299). SOUTH AFRICA: Transvaal: Rodin 3917 (Ba). HAWAIIAN ISLANDS: Hawaii: Rubtsoff 2615 (W--2624777). Maui: Cooley 11255 (Ws). Oahu: Moldenke & Moldenke 23105 (Ac); Nuttall s.n. [photo BM.3129] (Gz--photo).

VERBENA LITORALIS var. ALBIFLORA Moldenke

Additional bibliography: Hinton & Rzedowski, Journ. Arnold Arb. 53: 167. 1972; Moldenke, Phytologia 23: 369. 1972.

Recent collectors have found this plant growing in clearings beside houses, on slopes with Quercus, and as weedy plants in streets, blooming in March and both flowering and fruiting in August. Breedlove encountered it at 5200 feet altitude. The corollas are described as "white" on all the specimens cited.

Additional citations: MEXICO: Chiapas: Breedlove 9458 (Ws). HONDURAS: Distrito Central: Pfeifer 2012 (W). PERU: Loreto: Martin & Lau-Cam 1261 (Oa).

VERBENA LITORALIS var. CARACASANA (H.B.K.) Briq.

Additional bibliography: Schau., Linnaea 20: [476]. 1847; Moldenke, Phytologia 23: 293--295, 371, & 419. 1972.

VERBENA LITORALIS var. CONGESTA Moldenke

Additional & emended bibliography: Moldenke, Excerpt. Bot. A. 18: 445. 1971; Moldenke, Phytologia 23: 295. 1972.

VERBENA LOBATA Vell.

Additional & emended bibliography: Reitz, Sellowia 22: 145. 1970; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 839, 840, & xix, map 1394. 1971; Moldenke, Phytologia 23: 295—296. 1972.

Hatschbach has found this plant growing in the caopreira association. The corollas on Hatschbach 25324 are described as having been "lilac" in color when fresh, while those on 30676 were "violet".

Additional citations: BRAZIL: Paraná: Hatschbach 25324 (N), 30676 (Ld).

VERBENA LOBATA var. HIRSUTA Moldenke

Additional bibliography: Moldenke, Phytologia 23: 296. 1972.

Hatschbach describes this plant as an herb and found it growing in wet soil in clearings in a forest. The corollas on Hatschbach 28517 are said to have been "lilac" in color when fresh.

Additional citations: BRAZIL: Paraná: Hatschbach 28517 (Ld, N).

VERBENA LONGIFOLIA f. ALBIFLORA Moldenke

Additional bibliography: Moldenke, Phytologia 23: 296. 1972.

Contreras describes this plant as an herb with white flowers and found it growing "in a village", flowering in July.

Additional citations: GUATEMALA: El Quiché: Contreras 5247 (Ld).

VERBENA MACDOUGALII Heller

Additional bibliography: D. S. & H. B. Correll, Aquat. & Wetland Pl. SW. U. S. 1397 & 1399—1400. 1972; Farnsworth, Pharmacog. Titles 7 (10): xvi. 1972; Fong & al., Lloydia 35: 147. 1972; Moldenke, Phytologia 23: 369 & 436 (1972) and 24: 139. 1972; Halse, Fl. Canyon de Chelly 147 & 148 [thesis]. 1973; Rickett, Wild Fls. U. S. 6 (3): 544—546 & 783, pl. 196. 1973; Moldenke, Phytologia 28: 203. 1974.

Moir encountered this species "in steppe openings dominated by Festuca arizonica in Pseudotsuga menziesii forest zone" in New Mexico, while Lehto and his associates found it in a "mountain meadow in ponderosa pine zone". My wife, son, and myself have seen it abundant along roadsides and in clearings in ponderosa pine forests, often producing a spectacularly beautiful display. The Corrells (1972) give its distribution as "On flats at high elev., in wet mt. meadows and valleys, w. Tex. (Culberson Co.), N. M. (widespread in mts.) and Ariz. (Apache, Navajo, Coconino, Greenlee, Yavapai and Pima cos.), June—Oct., also s. Wyo. and cent. Ut." They refer to it as the "New Mexican Vervain".

The corollas on E. Meyer 604 are said to have been "purple" in color when fresh. Halse (1973) cites Halse 472 & 641 from the Canyon de Chelly. The P. A. Wilson 622, distributed as V. macdougalii, is actually f. albiflora Moldenke, as is also the plate 196 in Rickett's work (1973).

Additional citations: COLORADO: Conejos Co.: W. A. Weber 7865a

(Bl--73325); Weber & Salamun 12913 (Bl--199535). NEW MEXICO: Colfax Co.: L. C. Higgins 5764 (N). Lincoln Co.: Moir 66-21 (Bl--211259); Wooton & Standley 3497 (Bl--90189), 3651 (Bl--90199). Santa Fe Co.: Gillett & Mosquin 12246 (Bl--211571). ARIZONA: Apache Co.: Lehto, McGill, Nash, & Pinkava 11506 (N); Moldenke & Moldenke 27849 (Ac, Gz, Ld). Coconino Co.: Holmgren & Holmgren 4691 (W--2648521); E. Meyer 604 (Ba); H. H. Rusby 780 (N).

VERBENA MACDOUGALII f. ALBIFLORA Moldenke

Additional bibliography: Moldenke, *Phytologia* 23: 298. 1972; Rickett, *Wild Fls. U. S. 6* (3): [545], pl. 196. 1973.

Illustrations: Rickett, *Wild Fls. U. S. 6* (3): [545], pl. 196 (in color). 1973.

Material of this form has been distributed in some herbaria as typical V. macdougalii Heller. The illustration on plate 196 of Rickett's work (1973) is labeled and described as the typical form of the species, but the picture shows white corollas, so seems to represent f. albiflora instead.

Additional citations: NEW MEXICO: Santa Fe Co.: P. A. Wilson 622 (N).

VERBENA MACRODONTA Perry

Additional bibliography: Fedde & Schust. in Just, *Bot. Jahresber.* 60 (2): 575. 1941; Moldenke, *Phytologia* 23: 298. 1972.

VERBENA MACROSPERMA Speg.

Additional bibliography: Fedde & Schust. in Just, *Bot. Jahresber.* 54 (2): 747 (1934) and 59 (2): 417. 1939; Moldenke, *Phytologia* 23: 298. 1972.

VERBENA MARITIMA Small

Additional bibliography: Fedde & Schust. in Just, *Bot. Jahresber.* 60 (2): 573. 1941; Solbrig in Heywood, *Mod. Meth. Pl. Tax.* 87 & 89. 1968; Moldenke, *Phytologia* 23: 298--299 (1972) and 28: 250. 1974.

Solbrig (1968) reports that the normal pollen fertility in this species is 85 percent. The two photographs in the Bailey Hortorium herbarium, cited below, are of specimens deposited in the Britton Herbarium at the New York Botanical Garden.

There is an as yet unnamed artificial hybrid between V. maritima and V. canadensis (L.) Britton for which see under the reverse cross in this series of notes.

Additional citations: FLORIDA: Brevard Co.: Curtiss 5706 (Ba--photo). Dade Co.: Small & Small 5422 (Ba--photo). Saint Lucie Co.: MacDaniels s.n. [April 24, 1936] (Ba).

VERBENA MARRUBIODES Cham.

Additional bibliography: Reitz, *Sellowia* 22: 145. 1970; Moldenke, *Phytologia* 23: 299. 1972.

Additional citations: BRAZIL: São Paulo: Sellow s.n. [Bras. merid

Macbride photos 17429] (Ba--isotype).

VERBENA MEGAPOTAMICA Spreng.

Additional synonymy: Verbena phlogiflora var. alfa Troncoso, Darwiniana 16: [613], in syn. 1971.

Additional bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax. 87—89. 1968; Reitz, Sellowia 22: 145. 1970; Anon., Biol. Abstr. 54 (5): B. A. S. I. C. S. 106. 1972; Moldenke, Phytologia 23: 299--301, 372, 373, 419, & 431 (1972) and 24: 39 & 140. 1972; "S. K. J.", Biol. Abstr. 54: 2319. 1972.

Solbrig (1968) states that the normal pollen fertility in this species is 99 percent.

The Sellow collection cited below appears to be the type collection both of V. megapotamica Spreng. and of V. phlogiflora var. C Cham.

Additional citations: BRAZIL: Rio Grande do Sul: Sellow 13 [Macbride photos 17438, in part] (Ba--isotype).

VERBENA MEGAPOTAMICA Spreng. x V. PULCHELLA Sweet

Synonymy: Glandularia megapotamica x G. pulchella Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968.

Bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968.

This unnamed hybrid was apparently produced artificially by Solbrig and his associates in Massachusetts. Until authentic herbarium voucher specimens of the parental species can be examined it seems pointless to propose a binomial designation for it. The name, V. pulchella, is interpreted differently by South American workers and I am not at all sure that this species is really involved in this cross. In any case, such a hybrid might occur in nature where the ranges of the two parental species overlap and may be represented now in herbaria as some of the perplexing intermediate specimens about whose identity there has been such difference of opinion. Vouchers of the artificially produced hybrids most certainly should be made available for study.

VERBENA MENDOCINA R. A. Phil.

Additional & emended bibliography: Schnack & Covas, Darwiniana 7: [71], 72, 74, & 75, pl. 1 B. 1945; Moldenke, Phytologia 23: 301 (1972) and 24: 238. 1972.

VERBENA MENTHAEFOLIA Benth.

Additional bibliography: Higgins, Occas. Pap. San Diego Soc. Nat. Hist. 8: 121. 1949; Kearney, List Citations Place Publ. Spp. Ariz. Fl. 112 [thesis]. 1951; Sanchez Sanchez, Fl. Val. Mex., ed. 1, 328, fig. 263-B. 1969; Moldenke, Phytologia 23: 369—370 & 374 (1972), 24: 40 & 126 (1972), and 28: 212. 1974.

Additional illustrations: Sanchez Sanchez, Fl. Val. Mex., ed. 1, fig. 263-B. 1969.

Recent collectors have found this plant growing along roadsides and in grazed meadows with an abundance of sedge species including Cyperus fendlerianus, C. rusbyi, C. spectabilis, C. manimae, and

others, growing in shallow loamy soils in open oak-pine forests. The Marcks comment that their collection, cited below, has the "spikes panicked at apex". Higgins (1949) asserts that the species is common around San Diego, California, from Point Loma to San Ysidro and Sweetwater Valley, citing his nos. 6783, 11518, 17067, & 21049. Sanchez Sanchez (1969) found it on the pedregal in the Valley of Mexico.

The corollas on H. E. Moore 1625 are said to have been "light-blue" in color when fresh, while those on no. 3094 were "lavender".

Material of V. menthaefolia has been misidentified and distributed in some herbaria as V. gracilis Desf.

Additional citations: MEXICO: Durango: Marcks & Marcks 1244 (Ws). Hidalgo: H. E. Moore 1625 (Ba), 3094 (Ba). México: Pringle 8534 (Pd). Michoacán: Hinton & al. 11991 (Tu--98813).

VERBENA MICROPHYLLA H.B.K.

Additional bibliography: Schau., Linnaea 20: 477. 1847; R. C. Foster, Contrib. Gray Herb. 184: 171. 1958; Anon., Biol. Abstr. 54 (7): B. A. S. I. C. S. 280. 1972; Moldenke, Phytologia 24: 218, 233, & 243. 1972.

The photograph in the L. H. Bailey Hortorium herbarium, cited below, is of sheet 1190005 in the United States National Herbarium in Washington.

The Vervoorst 3197, distributed as V. microphylla, is actually V. parodii (Covas & Schnack) Moldenke, while Soejarto & Hernandez 1339 is Hierobotana inflata (H.B.K.) Briq.

Additional citations: PERU: Cuzco: Herrera s.n. [Cuzco, July 1923] (Ba--photo). Province undetermined: MacLean s.n. (Pd). BOLIVIA: La Paz: Rea C. 39 (W--2635748).

VERBENA MINUTIFLORA Briq.

Additional & emended bibliography: Angely, Fl. Anal. & Fitogeog. S. Paulo, ed. 1, 840 & xix, map 1395. 1971; Moldenke, Phytologia 23: 370. 1972.

The Angely (1971) reference in the bibliography above was previously erroneously cited by me as "1970", the title-page date, but the work was not actually published until 1971.

Recent collectors have encountered this plant in moist places, "brejo" associations, roadsides on campos, and pastures near artificial lakes, describing it as a shrub 1--1.7 m. tall. Hatschbach refers to it as "common". In addition to the months previously reported by me, it has been collected in anthesis in April, September, and November. The corollas are described as having been "lilac" in color when fresh on Hatschbach 24209, 25327, 25739, 27062, & 30740 and "purple" on Lindeman & Haas 3692.

Material of V. minutiflora has been misidentified and distributed in some herbaria as V. sagittalis Cham.

Additional citations: BRAZIL: Paraná: Hatschbach 24209 (N), 25327 (N), 25739 (Ld), 27062 (Ld), 30740 (Ld). Rio Grande do Sul:

Lindeman & Haas 3692 (N).

x**VERBENA MOECHINA** Moldenke

Additional synonymy: Verbena simplex x stricta Ahles ex Mohlenbrock & Voigt, Fl. South. Ill. 287. 1974.

Additional bibliography: Rydb., Fl. Prairies & Plains, pr. 1, 678. 1932; Fell, Fl. Winnebago Co. 122. 1955; Eilers, Univ. Iowa Stud. Nat. Hist. 21: 61 & 123. 1971; Rydb., Fl. Prairies & Plains, pr. 2, 2: 678. 1971; Moldenke, Phytologia 23: 370 & 437 (1972) and 28: 109. 1974; Mohlenbrock & Voigt, Fl. South. Ill. 286, 287, & 389. 1974.

Eilers (1971) records this hybrid as rare on sandy alluvial flats in Blackhawk and Johnson Counties, Iowa. He cites from the former county two collections by Shimek and from the latter Adams s.n. and Thorne 17398, all deposited in the herbarium of the University of Iowa. Braun found the plant growing on limestone-gravelly prairies, flowering and fruiting in July. Her collection, cited below, is a mixture with typical V. simplex Lehm. Mohlenbrock & Voigt (1974) record the hybrid from Hardin County, Illinois.

Additional citations: ILLINOIS: Story Island: E. L. Braun s.n. [VII-22-12] (W-2712369).

VERBENA MONACENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 23: 371. 1972.

Sivaraman asserts that this plant is cultivated at Calicut, Kerala, India, in shade of "deep-blue to white, all shades available". My wife and I have seen it in cultivation in private gardens and public parks in Delhi, India, and in various places in Ceylon.

Additional citations: CULTIVATED: India: Sivaraman 1583 (Z).

VERBENA MONTEVIDENSIS Spreng.

Additional bibliography: Reitz, Sellowia 22: 145. 1970; Moldenke, Phytologia 23: 371-372 (1972), 25: 244 (1973), and 28: 110. 1974.

Recent collectors refer to this plant as a shrub, 1-3 m. tall, almost leafless, and have encountered it in the "brejo" association and in the interior of woodlands, fruiting (in addition to the months previously recorded by me) in October. The corollas are said to have been "violet" in color when fresh on Hatschbach 28464 and Pire & Mroginski 152, but "purple (5 P 5/8)" on Lindeman & Haas 3010.

The Hatschbach 24209 and Lindeman & Haas 3692, distributed as V. montevidensis, are actually V. minutiflora Briq.

Additional citations: BRAZIL: Paraná: Hatschbach 28464 (Ld); Lindeman & Haas 3010 (N). Rio Grande do Sul: Rambo 49723 (Bl-64841). ARGENTINA: Corrientes: Quarín & Schinini 1088 (Ld). Misiones: Pire & Mroginski 152 (Ld).

VERBENA MORICOLOR Moldenke

Additional bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax.

87--89. 1968; Moldenke, *Phytologia* 23: 372--373 & 427 (1972) and 24: 36 & 38. 1972.

Solbrig (1968) reports that the normal pollen fertility in this species is 97 percent.

VERBENA MORICOLOR Moldenke x *V. PERUVIANA* (L.) Britton

Synonymy: *Glandularia moricolor* x *peruviana* Solbrig in Heywood, *Mod. Meth. Pl. Tax.* 87. 1968.

Bibliography: Solbrig in Heywood, *Mod. Meth. Pl. Tax.* 87 & 89. 1968; Moldenke, *Fifth Summ.* 2: 917 & 970. 1971; Moldenke, *Phytologia* 23: 372--373 (1972) and 24: 38. 1972.

Solbrig (1968) reports that the hybrid of *V. moricolor* with *V. peruviana* has a pollen fertility of 81 percent, while the reverse cross of *V. peruviana* with *V. moricolor* has a pollen fertility of only 56 percent. These hybrids are as yet without binomial designation and had best remain so until herbarium vouchers confirm the actual parentage. They may yet be found wild in South America where the ranges of the parental species overlap. It is to be hoped that authentic herbarium vouchers and photographs of the artificially produced hybrids will soon be available for study and for comparison with the many perplexing "intermediate" herbarium specimens now deposited in various herbaria.

VERBENA NANA Moldenke

Additional & emended bibliography: Angely, *Fl. Anal. & Fitogeogr. S. Paulo*, ed. 1, 4: 840 & xix, map 1395. 1971; Moldenke, *Phytologia* 23: 373. 1972.

VERBENA NEOMEXICANA (A. Gray) Small

Additional bibliography: Fedde & Schust. in Just, *Bot. Jahresber.* 60 (2): 575. 1941; Kearney, *List Citations Place Publ. Spp. Ariz. Fl.* 112 [thesis]. 1951; Mahler, *Keys Vasc. Pl. Black Gap*, ed. 3, 70. 1971; Moldenke, *Phytologia* 23: 373--376 (1972) and 24: 45 & 54. 1972.

Recent collectors have found this plant growing on *Acacia* flats, while Moran states that it is "locally common on open upper slopes" in Baja California. In addition to the months previously reported by me in this series of notes, it has been collected in fruit in May. The corollas are said to have been "light-blue, paler in the center" on *Moran* 17658.

The *Johnson & Webster* 566, distributed as *V. neomexicana*, is actually *V. canescens* H.B.K., *Taylor & Taylor* 6230 is *V. halei* Small, *Wootton & Standley* 3651 is *V. macdougalii* Heller, *Goodding* 90-50 and *Perry*, *Lehto*, *Hensel*, & *Pinkava* 11033 are *V. neomexicana* var. *xylopoda* Perry, and *A. Ruth* 1289 is *V. plicata* Greene.

Additional citations: MEXICO: Baja California: *Moran* 17658 (Ld). Chihuahua: *Weber & Charette* 11660 (Bl--176213).

VERBENA NEOMEXICANA var. *HIRTELLA* Perry

Additional bibliography: Fedde & Schust. in Just, *Bot. Jahres-*

ber. 60 (2): 575. 1941; Mahler, Keys Vasc. Pl. Black Gap, ed. 3, 70. 1971; Moldenke, Phytologia 23: 374--375 (1972) and 24: 257. 1972.

Additional citations: MEXICO: Durango: Matuda 38515 (Ac), 38516 (Ac), 38524 (Ac).

VERBENA NEOMEXICANA var. XYLOPODA Perry

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresher. 60 (2): 575. 1941; Kearney, List Citations Place Publ. Spp. Ariz. Fl. 112 [thesis]. 1951; Moldenke, Phytologia 23: 374--376 (1972) and 24: 45 & 257. 1972.

Recent collectors have encountered this plant on overgrazed land, on rocky outcrops with Fouquieria on hillsides, and in limestone soil in Larrea-mesquite communities. The Moran 17658, distributed as this variety, is actually typical V. neomexicana (A. Gray) Small.

Additional citations: TEXAS: Presidio Co.: L. C. Higgins 5070 (N). ARIZONA: Cochise Co.: Goodding 90-50 (Bl--103409). Pinal Co.: Lehto, Hensel, & Pinkava 11033 (N); Neff s.n. [Oracle, 27-V-73] (Rm). Santa Cruz Co.: Neff s.n. [Gardner Canyon, 2-VI-1973] (Rm); Pringle s.n. [Santa Rita Mtns., May 11, 1884] (Mi).

VERBENA OFFICINALIS L.

Emended synonymy: Verbenaca recta Fuchs, Hist. Plant. Basil. 591. 1542. Verbenaca recta sive mas Fuchs, Hist. Plant. Basil. 592. 1542. Verbena officinalis Cham. ex Angely, Fl. Anal. & Fito-geogr. S. Paulo, ed. 1, 4: 839, sphalm. 1971.

Additional & emended bibliography: Fuchs, Hist. Plant. Basil. 591--593. 1542; Chomel, Abrég. Hist. Pl. Usuel., ed. 2, vol. 1--3. 1761; Raensch., Nom. Bot., ed. 3, 3. 1797; S. Dickens in S. Shaw, Hist. & Antiq. Stafford. 1: 97--115. 1798; Desf., Tabl. Écol. Bot., ed. 1, 55. 1804; Willd., Enum. Pl. Hort. Berol. 2: 635. 1809; Desf., Tabl. Ecol. Bot., ed. 2, 66. 1815; S. Ell., Sketch, pr. 1 & 2, 2: 97 (1821) and 2: 743. 1824; J. Torr., Compend. Fl. 238. 1826; Bischoff, Grundr. Med. Bot. 18 & 305. 1831; W. Baxt., Brit. Phaenog. Bot., ed. 2, 1: pl. 26. 1834; Paxt., Pock. Bot. Dict., ed. 1, 328 (1840) and ed. 2, 328. 1849; Meddygon Myddfai, Phys. Myed. [transl. Pughe & Ithel.]. 1861; Hook. f., Stud. Fl. Brit. Isls., ed. 1, 296 & 503. 1870; Scotti, Fl. Med. Prov. Como. 1872; Gibert, Enum. Pl. Montevide. 43. 1873; Hook. f., Stud. Fl. Brit. Isls., ed. 2, 311--312 & 538. 1878; H. Mull., Nature 24: 307 & 308. 1881; H. Mull. [transl. D'A. Thompson], Fertiliz. Fls. 469. 1883; Hook. f., Stud. Fl. Brit. Isls., ed. 3, 313 & 562. 1884; Le Grand, Fl. Anal. Berry 72 & 212. 1887; J. L. Bennett, Fl. Rhode Isl. 30. 1888; Marcellus Empiricus [ed. Helmreich], Marcel. Medic. 1889; Dymock, Warden, & Hooper, Pharm. Ind., vol. 1--3. 1890--1893; Gentil, Invent. Gén. Pl. Vasc. Sarthe 202. 1892--1894; C. Bicknell, Fl. Bord. & San Remo 218. 1896; Hildegard, Phys. Heil. Hild. 1896--1897; Kuntze, Rev. Gen. Pl. 3 (2): 257. 1898; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 286. 1900; Baerecke, Anal. Key Ferns & Flow.

Pl. Atl. Sect. Middl. Fla. 114. 1906; B. Fedtsch. in O. A. & B. A. Fedtsch., Consp. Fl. Turkest. 5: 121--122. 1913; Beals, Flow. Lore & Leg. 165--171. 1917; Schnarf, Österr. Bot. Zeitschr. 72: 242--245. 1923; Mentz & Ostenfeld, Billed. Nord. Fl. 4: 50--51, fig. 4. 1924; Clute, Am. Botanist 33: 112. 1927; Bouloumoy, Fl. Liban & Syr. Atl. pl. 320, fig. 3. 1930; Grieve & Leyel, Modern Herb., pr. 1, 2: 830--831. 1931; Kubota & Okanishi, Fol. Pharm. Sin. 1931; M. Woodward, Leaves Gerard's Herb., pr. 1, 231--232. 1931; Kräusel in Just, Bot. Jahresber. 51 (1): 643 [35]. 1932; Rydb., Fl. Prairies & Plains, pr. 1, 677 & 967. 1932; Wangerin in Just, Bot. Jahresber. 54 (1): 1171 [367]. 1932; Fedde in Just, Bot. Jahresber. 51 (2): 382. 1933; Freise, Bol. Agric. São Paulo 34: 252--494. 1933; Ishidoya, Chin. Drog., vol. 1--3. 1933--1937; Wangerin in Just, Bot. Jahresber. 55 (1): 834. 1935; Gathorne-Hardy, Wild Fls. Brit. 22 & 120. 1938; Marzell in Just, Bot. Jahresber. 58 (1): 198 [4]. 1938; Wangerin in Just, Bot. Jahresber. 58 (1): 845 [275]. 1938; A. H. Evans, Fl. Cambridg. 129. 1939; Fedde in Just, Bot. Jahresber. 58 (2): 668. 1939; Kanjilal, Das, Kanjalal, & De, Fl. Assam 3: 462 & 561. 1939; R. E. Clarkson, Green Enchantment 269 & 328. 1940; Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 575. 1940; Biswas, Indian Forest Rec., ser. 2, Bot. 3: 42. 1941; Hernández, Hist. Pl. Nuev. Españ. 1942--1946; M. G. Palmer, Faun. & Fl. Ilfracombe Dist. 212. 1946; Harz, Enum. Sperm. Jap., pr. 1, 1: 190. 1948; Kroeber, Neuzeit. Kräuterb., vol. 2-3. 1949; E. G. López, Recurs. Med. Biol. 262. 1949; Parsa, Fl. Iran. 4 (1): 537--538, fig. 253. 1949; Batalla & Masclans, Collect. Bot. 2: 394. 1950; Chou, Pen-ts'ao Yung Fa Yen Chiu [Res. Use Herbs]. 1951; Kariyone & Kimura, Wa-ken-Yaku-yp Shokubutsu [Jap. & Chin. Herb. Med.]. 1952; Pételot, Pl. Méd. Camb. Laos & Vietn. [Arch. Réch. Agr. & Pastor. Viêt-Nam. 14, 18, 22, & 23], vol. 1--4. 1952--1954; Bolós & Masclans, Collect. Bot. 4: 432. 1955; Ikuse, Pollen Grains Jap. 128. 1956; R. C. Foster, Contrib. Gray Herb. 184: 171. 1958; Manfred, Siete Mil Recet. Bot. 1958; Bullock, Taxon 8: 204. 1959; Brennan in Jaeger, Wonderf. Life Fls. 124. 1961; Fournier, Quat. Fl. France 806 & 807, fig. 3352. 1961; Irwin & Wills, Roadside Fls. Tex. 190. 1961; Nair & Rehman, Bull. Nat. Bot. Gard. Lucknow 76: 3--5, text fig. 3. 1962; Erdtman, Berglund, & Praglowski, Introd. Scand. Pollen Fl. 2: 49 & 89. 1963; Fourcroy, Atlas Recon. Dir. Pl. Comm., ed. 2, pl. 158 [inf.]. 1963; Malik, Rehman, & Ahmad, Palist. Journ. Sci. Industr. Res. 7: 134 & 136, pl. 4, fig. 31. 1964; Perring, Sell, & Walters, Fl. Cambridg. 179. 1964; Htini, Hiltbrand, Schmid, Gröger, Johne, & Mothes, Experimentia 22: 656. 1966; Grieve & Leyel, Modern Herb., pr. 3, 2: 830--831. 1967; Deb, Sengupta, & Malick, Bull. Bot. Soc. Beng. 22: 210. 1968; Gunawardena, Gen. & Sp. Pl. Zeyl. 147. 1968; Vigo, Collect. Bot. 7: 1180. 1968; Misra, Bull. Bot. Surv. India 11: 327. 1969; N. P. Singh, Bull. Bot. Surv. India 11: 16 & 357. 1969; M. Woodward, Leaves Gerard's Herb., pr. 2, 231--232. 1969; Drar, Publ. Cairo Univ. Herb. 3: 111. 1970; Saxena, Bull. Bot. Surv. India 12: 56. 1970; Willaman & Li, Lloydia 33, Suppl. 3a: 220. 1970; Abbayes, Claustres, Corillion, & Dupont, Fl. & Veg.

Massif Armoric. 1: 662. 1971; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 825, 839, & xix. 1971; S. Ell., Sketch, pr. 3, 2: 97 & 743. 1971; Ferrarini, Giorn. Bot. Ital. 105: 259. 1971; Hartwell, Lloydia 34: 387. 1971; Hultén, Atlas Væxt. Utbred. Nord. 379, map 1474. 1971; Inouye in Wagner & Hörnhammer, Pharmacog. & Phytochem. 291 & 298. 1971; Khattab & El-Hadidi, Publ. Cairo Univ. Herb. 4: 93. 1971; Lousley, Fl. Isls. Scilly 230. 1971; Menghini, Giorn. Bot. Ital. 105: 333. 1971; Polunin, Pflanz. Europ. 277, 513, & 539. 1971; Rydb., Fl. Prairies & Plains, pr. 2, 2: 677 & 967. 1971; Sipple, Bartonica 41: 35. 1971; Tammara, Giorn. Bot. Ital. 105: 77. 1971; Abba, Inform. Bot. Ital. 4: 39. 1972; Amaral Franco in Tutin & al., Fl. Eur. 3: 123. 1972; Beadle, Evans, Carolin, & Tindale, Fl. Sydney Reg., ed. 2, 507. 1972; R. E. Clarkson, Golden Age Herbs 269 & 328. 1972; R. E. Clarkson, Herbs & Sav. Seeds 212. 1972; Edees, Fl. Staffordsh. 133. 1972; Encke & Buchheim in Zander, Handwörterb. Pflanzennam., ed. 10, 520 & 541. 1972; Farnsworth, Pharmacog. Titles 7 (4): xcv & 222 (1972), 7 (10): xvi (1972), and 8 (9): xiii & 635. 1972; Fong & al., Lloydia 35: 147. 1972; Hara, Enum. Sperm. Jap., pr. 2, 1: 190. 1972; Huang, Pollen Fl. Taiwan 244, pl. 163, fig. 6 & 7. 1972; Inouye & al., Chem. Pharm. Bull. 20: 1287—1296. 1972; Kunkel, Cuad. Bot. Canar. 16: 38. 1972; Kunkel, Monog. Biol. Canar. 3: 62. 1972; Rouleau, Taxon Index Vol. 1—20, part 1: 379. 1972; R. R. Stewart in Nasir & Ali, Fl. West Pakist. 608. 1972; Trease & Evans, Pharmacog., ed. 10, 564. 1972; Tutin in Tutin & al., Fl. Eur. 3: 369. 1972; Urbchat, Mitteil. Arbeitsgemeinschaft. Florist. Schlesw.-Holst. 20: 135 & 250, map 2372. 1972; Whipple, Journ. Elish. Mitch. Sci. Soc. 88: 7. 1972; Moldenke, Phytologia 24: 217, 219, 229—231, 241, & 248 (1972) and 25: 231—235 & 244. 1973; Anon., Biol. Abstr. 55 (10): B. A. S. I. C. S.270 (1973) and 56 (3): B. A. S. I. C. S.280. 1973; Anon., Hort. Bot. Univ. Monaster. Ind. Sem. 1972/1973: 709. 1973; Farnsworth, Pharmacog. Titles 6, Cum. Gen. Ind. [121] (1973) and 8 (6): x & 479. 1973; Fenarol, Webbia 28: 356 & 410. 1973; Frohne & Jensen, System. Pflanzenr. 203 & 261. 1973; Jacobsen, Kirkia 9 (1): 172. 1973; L. P. Mill., Phytochem. 1: 329, 362, 393, & 410. 1973; Moldenke, Biol. Abstr. 56: 1246. 1973; Rimpler & Schafer, Tetrahed. Let. 17: 1463—1464. 1973; Takematsu, Konnai, & Takeuchi, Bull. Coll. Agr. Utsun. Univ. 8 (3): 164. 1973; Moldenke, Phytologia 28: 211, 216, & 220. 1974.

Additional & emended illustrations: Fuchs, Hist. Plant. Basil. 593 (in color). 1542; W. Baxt., Brit. Phaenog. Bot., ed. 2, 1: pl. 26 (in color). 1834; Mentz & Ostenfeld, Billed. Nord. Fl. 4: 51, fig. 4. 1924; Parsa, Fl. Iran 4 (1): 538, fig. 253. 1949; Fournier, Quat. Fl. France 807, fig. 3352. 1961; Nair & Rehman, Bull. Nat. Bot. Gard. Lucknow 76: 3, text fig. 3. 1962; Fourcroy, Atlas Recon. Dir. Pl. Comm., ed. 2, pl. 158 [inf.]. 1963; Malik, Rehman, & Ahmad, Pakist. Journ. Sci. Indust. Res. 7: 134, pl. 4, fig. 31. 1964; Huang, Pollen Fl. Taiwan pl. 163, fig. 6 & 7. 1972.

It is of interest to note the disagreement of authors about the longevity of this plant. Raeuschel (1797) and Datta & Majumdar (1966), for instance, categorically classify it as an annual. Pat-

zat & Rechinger (1967), on the other hand, describe it definitely as a perennial. Probably it varies depending on local climate and other ecologic conditions. Abedin 2735 is actually described on its label as a "shrub".

The corollas are described as "violet" in color by LeGrand (1887), "lavender-rose" on Koelz 13246, "bright-lavender" on Fosberg 37559, "lavender" on Fosberg 37244 & 38169, "rose-purple" on Fosberg 38374, "purple" on Farooqi & Qaiser 2769, 2797, & 3421, Fosberg 38613, and Qureshi 263, "blue" on Brydolf s.n. [24/5/1972], Farooqi 14, Qaiser & Ghafoor 1659, and J. M. Wood 473, "bluish" on Abedin 2735 & 7522, "bluish-white" on Qaiser & Ghafoor 1674, "pink" on Abedin 7740 and Qaiser 259, "light pinkish-purple" on Qaiser & Ghafoor 4892, and "pinkish-white" on Qaiser & Ghafoor 1851.

Huang (1972) describes the pollen of V. officinalis as having "Grains 3 (—4)—colporate; suboblate to oblate-spheroidal; 26–33 x 29–38 μ ; amb subangular; colpi 23–24 x 3 μ ; exine 2 μ thick; tectum psilate; sexine finely reticulate, with OL-pattern; nexine as thick as sexine." This description is based on material taken from Sasaki s.n. [Taipei, July 1921] and Huang 2126. He provides illustrations. Brenan (1961) informs us that the period when abundant pollen is shed is from 7–11:30 a.m.; small quantities of pollen are still present until 2 p.m. Löve (1971) reports the chromosome count as: $2n = 14$, based on Murin & Sheikh s.n. from a canal bank at Kadhimiya, Iraq.

The supposed hybrid of V. officinalis with Veronica maritima L., described and illustrated by Haartman in 1751 and later tentatively named xVeronicena haartmani by me, is probably nothing more than a specimen of what Linnaeus named Veronica spuria in 1753, but a search ought to be instituted for any specimens so named among Linnean material in Sweden or England.

Parsa (1949) cites Darlington 1726, Lindsay 1026, Stapf s.n., and numerous of his own collections from Iraq. DeMiré & Gillet (1956) record the species from the Niger Republic; Rainha found it growing in wet ground in Portugal. Beadle and his associates (1972) describe it as "widespread" in the Sydney, Australia, region, the corollas there "pink to lilac" in color. Urbschat (1972) records it from Schleswig-Holstein, but comments that it has not been found there anymore in recent years. Similarly, in Staffordshire, England, Edees (1972) reports that it is found in "Waste places about villages....rare now, formerly 'unfrequent'". Kunkel (1972) found it on Lanzarote island in the Canaries. Polunin (1971) gives its general distribution as "Schutt, Wegränder, Ufer. Juni–Oktober. Ganz Europa (ausser IS. [Iceland]): eingebürgert IRL. N. SF [Ireland, Norway, Finland]" — interestingly he here seems to regard it as native in Sweden, while in his 1969 work he regards it as introduced there (as in Norway). Also, he here says "all of Europe", while in 1969 he said "Much of Europe".

Lousley (1971) records it from Saint Mary's and Tresco islands

in the Scilly Islands group and cites Millett 1852, commenting that it is "rare on roadsides and waste places" there. Ferrarini (1971) found it on Palmaria Island in cultivated land and in areas of abandoned cultivation.

Jacobsen (1973) says that in Rhodesia it is occasional "In grassland and scrub, escape from earlier cultivation?" The Collector undetermined s.n. specimen, cited below as having been cultivated in India, is said to have been grown there from seed secured in Nepal. Kanjilal and his associates (1939) record it from an altitude of 5000 feet in the Khasa Hills of Assam, where, they say, it flowers in the rainy season and fruits in the cold season. In an apparent reference to xV. hybrida Voss, they comment that "Many Verbenas are beautiful garden plants". Fenaroli (1973) describes its habitat as "Geol. eurasic. Gramineti e incolti" and cites collections by Béguinot (1902), Fenaroli (1959), Gussone (1823), and Rabenhorst (1847).

From India, Saxena (1970) reports it "Rare in open places" in Madhya Pradesh, citing Indorkar 11146, while Singh (1969) found it to be "Frequent, along the sides of sugarcane and paddy fields" and "Near water", citing Bot. Surv. India 19640, 25510, 27415, 31337, & 31639. Datta & Majumdar (1966) found it in waste places in Bengal, flowering from March to June. Misra (1969) found it growing "In waste places, sides of walls". In Bihar the Banerjees (1969) encountered it in open land, including roadsides and waste places. Deb and his associates (1968) describe it as an "Erect herb with violet flowers, occurring in open situations, citing Deb 329 and Sengupta 1271, 1275, & 1278.

Bicknell (1896) reports it as very abundant in grassy places in western Liguria, flowering there throughout the summer. Koelz found it on the borders of fields in Afghanistan. Vigo (1968) says that it grows in the "Loto-juncetum acutiflori" association, while Bolós & Masclans (1955) found it to be part of the "Paspalo-Agrostidion" association in Spain. Grieve (1967) gives its general distribution as "Europe, Barbary, China, Cochinchina, Japan". Rauschel (1797) accredits the synonymous V. spuria to "Canada".

Fosberg found V. officinalis "common along paths on broken cultivated land with rough limestone outcrops, rock piles, and stone walls" on Taketomi island in the Ryukyus. On other islands of the same archipelago he found it to be common on roadsides in cultivated land, at the edges of cultivated fields near the edge of a narrow mangrove belt, occasional on weedy roadsides and waste places, and in cultivated ground in general. Perring, Sell, & Walters (1964) describe it as occasional throughout the county of Cambridgeshire, England, on roadsides and in grassy and waste places; also in Wales, Ireland, and Fife in Scotland. They assert that it was first reported from Cambridgeshire by Ray in 1660. Evans (1939) asserts that in Cambridgeshire it occurs "on dry roadsides and waste ground on all soils, even in peat districts, never common".

Drar (1970) cites his nos. 1667, 2032, & 2394 from the Sudan, while Khattab & El-Hadidi (1971) cite their no. 334 from Yemen and

nos. 445 & 1515 from Hedjaz, Arabia. The Sudan specimens were collected along roadsides and in a wadi, while the Hedjaz ones came from sandy canal banks. Tammaro (1971) records the plant from Palmaria Island in the Gulf of Spezia islands of Italy. López (1949) cites his nos. 1702 & 1703 from eastern Guinea, where he found the species to be very common "Vive en los taludes, caminos, escombros; planta ruderal. Sube a los 1.500 m.s.m." He gives its overall distribution as "Europa, Africa del Norte, Asia Central y Septentrional y además difundida por casi toda la superficie terrestre; su límite septentrional en Europa pasa por las Islas Británicas (Northumberland), Dinamarca, Schonen, Kowno; en Africa tiene su límite meridional en las Islas de Cabo Verde y Abisinia; además de Africa del Sur, en la India, Australia, Nueva Zelanda, Polinesia, Indias Occidentales, América del Norte y del Sur."

Baker (1900) cites Hildebrandt 445, Schweinfurth & Riva 1116, and Steudner 1304 from Eritrea, Quartin-Dillon s.n., Rohlf's & Steker s.n., and Schimper 7 & 284 from Ethiopia, Scott-Elliot 7800 from Kenya, Révoil s.n. from Somalia, Cienkowski s.n. from Sudan, and two Gürke records from Tanganyika. He gives the species' distribution as "Spread through the north temperate zone in the Old World, and extending to South Africa; introduced into America." Stewart (1972) says that in Pakistan it is "A common weed throughout our range, sometimes ascending to c. 8000'. Baluch., N. Wazir., NWFP, Pb., Haz., Lower Swat, Kashmir, etc." Takematsu and his associates (1973) tell us that in Japan the plant is known as "kumatuzura" and that it is a "weed" in the U. S. S. R.

Paxton (1840) calls both V. officinalis and V. spuria "worthless" from the horticultural standpoint. Additional common names (in addition to the very numerous ones previously recorded by me) are "ayauhxochitl", "berberina", "chichiatic", "erba croce", "herba verbenae", "kumatsuzura", "laenge-jernurt", "ma pien ts'ao", "seona-se-seholo", "verbenae officinalis", "vervaine officinale", "wild verbenae", and "yaena". The "Procumbent Vervain" of Torrey (1843) probably refers to V. officinalis var. prostrata Gren. & Godr.

In regard to the chemical and pharmaceutical properties of V. officinalis much has recently been published. Trease & Evans (1972) say "Verbenae officinalis, the Herba Verbenae of many pharmacopoeias. This plant contains a hormone-like substance, verbenalin, with strong parasymphathetic action." Miller (1973) notes "verbenalin (XVIII), the glucoside of verbenalinol, occurs in all parts of Verbenae officinalis L.; the inflorescences are especially rich in the glucoside". Bischoff (1831) notes that "Die Blätter (Herba Verbenae) sind geruchlos, von einem schwachen, herben und bitterlichen Geschmackem sie waren früher als ein Art Universalmittel gegen eine Menge von Krankheiten im Ruse und man schrien ihnen wunderbare Kräfte zu. Jetzt sind sie höchstens noch zuweilen als ausserliches, erweichendes Volksmittel im Gebrauche."

[to be continued]